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Editor - Captain L. B. Marshall, MC, USN (RET)

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Policy

The U. S. Navy Medical News Letter is basically an official Medical Department publication inviting the attention of officers of the Medical Department of the Regular Navy and Naval Reserve to timely up-to-date items of official and professional interest relative to medicine, dentistry, and allied sciences. The amount of information used is only that necessary to inform adequately officers of the Medical Department of the existence and source of such information. The items used are neither intended to be nor susceptible to use by any officer as a substitute for any item or article in its original form. All readers of the News Letter are urged to obtain the original of those items of particular interest to the individual.

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Intramuscular Oxytetracycline in the Treatment of Yaws

In December 1951, a study of the treatment of yaws with intramuscular oxytetracycline was initiated. This investigation, a part of an over-all program for evaluating antibiotics in the treatment and control of yaws, was conducted at the Yaws Investigation Center of the Service Cooperatif Inter-Americain de la Sante Publique, a cooperative project of the American and Haitian Governments, at Gressier, Haiti.

One hundred and twenty patients, all West Indians, were selected for this study solely on the basis of obtaining representative cases of early and late yaws for treatment with intramuscular oxytetracycline. Eighty-four patients, their ages ranging from 5 months to 60 years, were male; 36 were female, and their ages ranged from 7 months to 69 years. One hundred and eight had early yaws. Five of these had primary lesions only; 42 had primary lesions and such secondary lesions as papillomatous, circinate, macular, papular, and condylomatous frambesiomas; 3 had primary lesions, frambesiomas, and plantar lesions (crab yaws); 30 had frambesiomas only; 9 had frambesiomas and plantar lesions; 6 had ulcerous plantar lesions only; 9 had nonulcerous plantar lesions (plantar hyperkeratoses); and 4 had ulcerous and nonulcerous plantar lesions. Twelve patients had late yaws lesions, such as gumma, gangosa (rhinopharyngitis mutilans), osteoperiostitis and dactylitis, or indolent ulcerations.

The patients usually appeared ill, and many complained of fever, headache, malaise, bone and joint pains and stiffness, lassitude, abdominal soreness, and insomnia. In addition to their external lesions, many of the patients with early yaws had swollen inguinal, femoral, and submental lymph nodes.

The authors critically observed the patients during treatment and for adequate periods thereafter. These patients, highly satisfied with the rapid healing of their lesions, returned regularly for post-treatment examinations and serologic studies.

Twenty-four to 72 hours after beginning treatment with intramuscular oxytetracycline, primary and secondary lesions, depending on their size and location, were free of Treponemata pertenue as demonstrated by phase contrast microscopy. Usually by 48 hours, the lesions were so dry that no exudate was available for examination.

Primary lesions, uncomplicated by heavy bacterial contamination and extensive ulceration, were dry by the second or third day of treatment, and complete closure with crusting usually occurred by the fifth day of treatment. Fourteen ulcerated primary lesions that were heavily contaminated with bacteria, although slower in closing, responded to combined therapy with intramuscular oxytetracycline and topically applied crystalline oxytetracycline and healed completely within 3 to 4 weeks.

Secondary lesions or frambesiomas of the face, trunk, and limbs reacted quickly to intramuscular oxytetracycline and, unless very thick or extensive, were covered with crusts or were healed within 5 to 7 days after beginning treatment. Two weeks after starting therapy, all that remained of these lesions were hyperpigmented, depigmented, or slightly erythematous areas which regained normal skin color within 1 to 2 months. Mild wrinkling of the previously involved skin was the only noticeable sign after 2 months. Although more dispersed, the smaller papular and lichenoid frambesiomas disappeared more rapidly. Perianal and genital condylomatous frambesiomas were drying within 24 to 48 hours and by the end of the treatment were completely dry. Two weeks after beginning therapy, only slightly thickened and wrinkled skin marked their sites.

Plantar lesions reacted as quickly to these doses of intramuscular oxytetracycline as they did to orally administered crystalline oxytetracycline. Within 24 hours, ulcerous plantar lesions as well as nonulcerous lesions (plantar hyperkeratoses), which in many instances had been so painful that the patients were unable to walk or even to stand without assistance or support, became considerably less painful. By 48 to 72 hours after beginning treatment, the patients were again walking on the affected parts of the soles, and by the fifth or sixth day, they had completely useful lower extremities. By the third week after beginning treatment, the appearances of the plantar surfaces scarcely resembled those observed prior to therapy.

The lesions of late yaws responded to intramuscular oxytetracycline in the same dramatic manner as they did to orally administered crystalline oxytetracycline. Indolent ulcerations quickly healed, especially when systemic therapy was supplemented by topical applications of crystalline oxytetracycline. The progress of gangosa was arrested: deforming osteoperiostitis, tenosynovitis, and dactylitis regressed. Five patients were given 2 courses of treatment, and 1 patient received 3 courses.

Intramuscular oxytetracycline consistently produced melioration of the systemic manifestations of yaws within 24 hours. By 48 hours, the patients felt well, became hopeful, and expressed their confidence by the

favorite Creole expression, "map debat" (ready for a fight). The children, many of whom were severely malnourished as well as sick at the time treatment was begun, speedily gained weight and strength and were able to play actively.

The trends of the serologic titers of these patients treated with intramuscular oxytetracycline, as well as those treated with other antibiotics including procaine penicillin, are still being observed. The serologic responses, following therapy with the antibiotics, have been extremely variable, although in many cases more than 2 years have elapsed since completion of treatment. In Haiti, where other diseases such as malaria are also prevalent and which can give rise to false biologic reactions that are unaffected by therapy, the authors question the feasibility of trying to evaluate yaws therapy entirely from a serologic standpoint. (Antibiotics and Chemotherapy, Feb. 1954, E. H. Loughlin, A. A. Joseph, and F. Duvalier; The New York Medical College and the Flower and Fifth Avenue Hospitals, New York, N. Y.)

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Coccidioidomycosis

The granulomatous disease caused by Coccidioides immitis has a very high incidence in its areas of endemicity, but 75% of human coccidioidal infections are subclinical. Of the 25% presenting a definite clinical picture associated with a primary relatively benign infection, 1 of every 100 white males and 10 of every 100 Negro males disseminate beyond the initial area of infection.

The primary disease, that is, the benign form of coccidioidomycosis, encompasses the initial infection (almost invariably in the lungs), the generalized toxic manifestations associated with this, such as fever, arthralgia, erythema nodosum, and others, and certain complications such as pulmonary cavitation, hemorrhage, bronchopleural fistula, and hydropneumothorax. All the afore-mentioned symptoms and findings constitute a primary infection with C. immitis: that is, the organism is still being held within the lungs and pleura. However, when the organism breaks through the defense of the hilar lymph nodes and is carried by the blood stream or lymphatics to other systems of the body such as musculoskeletal, central nervous, genitourinary, and others, one has a disseminated or progressive coccidioidomycosis with a drastically different prognosis. Here the chronic and toxic picture of osteomyelitis, of repeated abscess formation, of the tuberculous type of meningitis with central nervous system blocks presents a very serious, usually progressive, picture leading to death in 50% of white and 85% of Negro males. This differentiation is very important and in the past a misunderstanding of this has given rise to false encouraging reports about the treatment of the disseminated disease.

As is well known, coccidioidomycosis is endemic in the south San Joaquin Valley, the westerly slopes of the lower California coast range, and in spotty areas south of the Tehachapis. It is also found in pockets in Southern Utah and Nevada. There is a large area of endemicity in Southern Arizona. New Mexico has endemic coccidioidomycosis, and it is also present in western Texas. Outside of this country, it is found in Sonora and Chihuahua, Mexico, in the Chaco of Argentina, in the highlands of Venezuela, and probably in many other areas of the world where the soil, the temperature, the precipitation, and the other factors combine to make an environment in which C. immitis can flourish.

"Semiarid" best describes such endemic areas of coccidioidomycosis, but that is only part of the description. The organism does not flourish in the desert which has occasional rain, but rather on the edge of semidesert regions. It does not flourish in all such areas by any means, for there are many such areas in the West where coccidioidomycosis does not occur. The organism appears to require great summer heat, weeks or months of temperatures rarely getting down below 105. Possibly as a corollary to this, it does not flourish in areas where the winter is steadily cold. It requires water and does not do as well in the years following light seasonal rainfalls. It seems to require long periods without rain, and a soil that can be carried about as a fine dust; and, to aid distribution, it requires the winds to carry it.

The treatment of coccidioidomycosis is still primarily a nonspecific affair. Specific treatment has certainly been sought and occasionally glowing reports written, but primary coccidioidomycosis is usually a self-limited disease and progressive or disseminated coccidioidomycosis is a very chronic, often remitting affair, which makes evaluation of treatment difficult. In general, the treatment of clinically manifest primary coccidioidomycosis is much like the treatment of influenza, just as the symptoms are not unlike those of influenza. This applies whether erythema nodosum is present or not. Complications of the primary phase, such as cavitation and pulmonary hemorrhage, are best treated relatively conservatively, and whether for valid reason or not, the fact that these complications exist makes it quite unlikely that the disease will disseminate. Most coccidioidomycosis cavities heal of themselves in a few months and should certainly be allowed to do so. Persistent ones last years and may be associated with intermittent hemorrhage. Here surgery is frequently indicated, and particularly so if the cavity is near the periphery of the lung.

When coccidioidomycosis disseminates, a drastically different picture presents itself. Here the treatment is definitely the institution of a regimen such as is used in the treatment of pulmonary and extrapulmonary tuberculosis. It is the author's strong impression that a regimen of rest and supportive measures, if instituted early in the disseminated disease, can make a definite statistical difference in outcome.

Many specific forms of treatment have been tried, with little or no success; to mention a few: arsphenamine, gentian violet, thymol, copper, antimony and potassium tartrate, iodides, sulfonamides, all of the commercial antibiotics, actidione, vanillin, extract of buttercup, and many others. Strong claims have been made for a vaccine, but the results have not been duplicated. Coccidioidin desensitization has been tried and also seems to be of little value.

For the past 6 years the author has been using prodigiosin, an extract of Serratia marcescens, in the treatment of disseminated coccidioidomycosis.

The clinical evaluation of prodigiosin and other agents is being continued as is the search for the intermediate host of Coccidioides immitis. (Am. J. M. Sc., Mar. 1954, R. O. Egeberg, M. D.; Wadsworth General Hospital, Veterans Administration Center, Los Angeles, Calif.)

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Histoplasmosis

Histoplasmosis, which previously had been considered to be a rare and fatal disease, now occurs relatively often especially in the middle western United States. It has been shown that the endemic center of histoplasmosis coincides with the region of high incidence of (1) pulmonary calcifications, and (2) histoplasmin skin reactors.

Studies of clinical histoplasmosis reveal that there tends to be a greater incidence of the disease in the extremes of life. Although the sex distribution is approximately equal among infants and children, the male is more frequently involved after 10 years of age. Accumulated data confirm the growing concept that histoplasmosis is not universally fatal. In fact, the increasing number of cases, reported and unreported, in which the patients recover suggests that it may well be a common infection with relatively few fatalities.

Histoplasmosis is characterized by protean manifestations. They may include irregular fever, weight loss, cachexia, anorexia, nausea, "indigestion," vomiting, diarrhea, jaundice, cutaneous or mucosal ulcerations, cough, sputum, pneumonia that is refractory to all antibiotics, hepatomegaly that occasionally is accompanied by jaundice, splenomegaly, and lymphadenopathy. Leukopenia and anemia are common in the more advanced disease. The course may vary from a mild vague illness lasting a few days or weeks to a fulminating, rapidly fatal disease. Thus, in the usual absence of pathognomonic signs and symptoms, the detection of histoplasmosis requires, first, a high index of suspicion, and second, a specific program of clinical and laboratory study.

This article reports, in part, the results of the cooperative studies of the Departments of Medicine and Veterinary Pathology, Ohio State University, on clinical histoplasmosis in man, as well as spontaneous and experimental disease in dogs.

Although extensive investigations have been conducted during recent years, relatively little is known of the epidemiology of histoplasmosis. A wide variety of factors are being investigated, such as animals, soil, humidity, wind currents, water, and crops. Epidemics have been described from such varied sources as pigeon excreta in a water tower, a silo, a cave, chicken houses, a storm cellar, and an owl's nest.

To date, histoplasmosis has been observed in dogs, cats, rats, mice, skunks, cattle, a horse, and a kodiak bear. At this time it is difficult to determine whether these animals may serve as a reservoir for the disease in man or whether they become infected from the same source as do humans. Because the spores of fungi, including those of Histoplasma capsulatum, are considerably lighter than grains of pollen, it is conceivable that air-borne infections with these agents may readily affect both man and animals in endemic areas.

Based on studies in the dog, the authors demonstrated that there are at least four potential routes of dissemination of Histoplasma capsulatum: (1) sputum, (2) urine, (3) feces, and (4) saliva and vomitus. The importance of ectoparasites in the spread of the fungus is not known. A study of 68 humans with prolonged household contact with 11 dogs clinically ill with histoplasmosis did not elicit any evidence of spread from the infected animals to man. Although laboratory infections have been reported by others, 42 laboratory workers and animal attendants who participated in the authors' studies of histoplasmosis over a 5-year period, with exposures varying from 3 months to 5 years, show no evidence of active histoplasmosis.

At present there is no satisfactory specific therapeutic agent for histoplasmosis.

Present treatment of histoplasmosis is still largely supportive, in a manner similar to the long-established therapy for tuberculosis. (Ann. Int. Med., Feb. 1954, J. A. Prior, M. D., S. Saslaw, M. D., Ph. D., and C. R. Cole, D. V. M.; Departments of Medicine and Veterinary Pathology, Ohio State University, Columbus, Ohio)

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Etiology of Cardiac Enlargement

From a review of the extensive literature on the subject, it is obvious that the majority of authors consider hypertension to be an essential factor in the causation of an enlarged heart, in cases with coronary occlusion. A clear, dissenting minority, however, does exist. Because of this diversity of opinion, because of the basic and clinical importance of the subject, and because all the conclusions reached hitherto were based on an erroneous definition of hypertension, and were, therefore, obviously untenable, it seems advisable to reconsider the entire problem. Because the blood pres-

sure normally increases with age and varies with sex, both the age and sex of each patient must be taken into account before the presence of hypertension can be definitely established and before conclusions concerning its effects on the size of the heart can be drawn.

Such correct definitions of hypertension have, hitherto, not been available. In order to establish the range of normal blood pressure and to define the limits of hypertension, the author with his associates recently analyzed the blood pressure of many thousands of working people, between the ages of 16 and 65 years. With their newly established limits of hypertension, an attempt has been made to determine whether hypertension alone or coronary artery disease alone causes the cardiac enlargement found in cases of coronary occlusion.

The heart was considered to be "enlarged," when its total transverse diameter was unequivocally more than one-half of the total internal thoracic diameter, measured at the level of the dome of the diaphragm. The shape and general silhouette of the heart were also studied before the diagnosis of cardiac enlargement was made. In every case, it was clearly evident that the total transverse diameter of the heart, as well as its area and volume, were enlarged. The Clark-Ungerleider tables served as a further check on the determination of the size of the heart.

Six hundred patients, 16 to 65 years of age, with coronary occlusions were studied. The author limited himself to this age group simply because the blood pressures of people, 16 to 65 years old, gainfully employed, had been the basis of the statistical analysis of blood pressure ranges. Of these, 500 were men and 100 were women. Of the 500 men patients, the largest group (25.6%) was between the ages of 50 and 54 years; the next largest group (23.0%) was 55 to 59 years of age; 17.9% were 45 to 49 years old; 15.4% were 40 to 44 years old, and 12.6% were between 60 and 64 years of age. Thus one-half of the men were 50 to 60 years old.

This age seems to be the dangerous decade for the occurrence of coronary occlusion among men who are less than 65 years old. Nevertheless, nearly two-fifths (38.8%) of the patients were under 50 years of age.

Of the 500 men with coronary occlusion, 136 had had hypertension, 332 had had normal pressure, and 32 were borderline cases. Seventy-seven of the 500 (15.4%) had definitely enlarged hearts. Of these 77, 29 had hypertension, 45 had normal blood pressure, and 3 were borderline cases. The frequency of cardiac enlargement in those with hypertension was 21.3% and in those with normal blood pressure it was 13.6%.

At least 27 of the patients with normal pressure and large hearts had never been in heart failure. Heart failure, therefore, is not an essential factor in the production of cardiac enlargement in those with normal blood pressure.

Hypertension does not predispose to ventricular aneurysm any more than does normal blood pressure.

Cardiac enlargement was more frequent in the hypertensive patients in each age group. It seems clear, then, that hypertension is a factor in the causation of enlargement of the heart, in those with coronary occlusion.

The incidence of enlargement of the heart increased sharply at the age of 55 in patients with normal blood pressure. Age, with its associated coronary sclerosis is also an important cause of cardiac enlargement in coronary occlusion. When both hypertension and coronary sclerosis (the aging process) occur simultaneously, the incidence of cardiac enlargement is most frequent--almost two-fifths of the cases of coronary occlusion.

Among the 100 women studied, 44 had enlargement of the heart. The ratio of cardiac enlargement among the women was almost 3 times that among the men--44.0% to 15.4%. This higher frequency was found among the hypertensive group--women 52.2% and men 21.3%, as well as among those with normal blood pressure--women 23.8% and men, 13.6%.

Hypertension occurred in 71% of the female patients and in 27% of the male patients. Because 71% of the women with coronary occlusion had hypertension, and because 44% had cardiac enlargement, hypertension appears to be an important cause of enlargement of the heart in women.

In women with coronary occlusion the frequency of cardiac enlargement was greatest in the 60 to 64 age group when coronary sclerosis and hypertension both occurred most often.

Because 21% of the women had a normal blood pressure, and because 23.8% of these had an enlargement of the heart, coronary sclerosis alone also appears to be a cause of cardiac enlargement.

The combination of hypertension and coronary sclerosis (the aging process) is the most important factor in the causation of enlargement of the heart in patients with coronary occlusion. (Am. Heart J., Mar. 1954, A. M. Master, M. D.; Cardiographic Laboratory, The Mount Sinai Hospital, New York, N. Y.)

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Long-Term Prognosis Following Myocardial Infarction

The primary purpose of this survey was to determine the long-term prognosis following the first attack of myocardial infarction. The cases employed in this study were carefully selected. Only those in which the attacks were definite first attacks were chosen. The present analysis of a follow-up of several hundred cases over a period of 5 or more years serves to determine the ultimate prognosis in recent myocardial infarction, and to clarify some of the factors involved in such prognosis. This should provide a basis for evaluating the benefits of therapy and management.

The life expectancy following recovery from the first attack of myocardial infarction is better than had previously been reported. In this

series two-thirds of the 285 patients who recovered survived more than 5 years, two-fifths lived over 10 years, and one-tenth of the cases lived more than 15 years. The average survival time including those who were still alive at the end of the study was more than 8 years. Obviously, the life expectancy is determined in part by the age of the patient, regardless of the occurrence of myocardial infarction. The older patients would thus have a shorter expectancy, depending on their age. Long-term survival may therefore be limited by this age factor in the older patients, rather than entirely by the occurrence of a myocardial infarction.

In this study it was shown, on careful analysis of a large sample of cases surviving their first myocardial infarction, that the survival time is longer on the average than was indicated in earlier studies in which the number of cases followed over many years was smaller and the identification of the time of occurrence of the first myocardial infarction was not so clearly established. As the diagnostic armamentarium improves, more benign forms of myocardial infarction are recognized. The presence of such cases in long-term follow-up analyses tends to improve the outlook of surviving cases of myocardial infarction. This trend to recognize benign forms of acute myocardial infarction must alter the concept of the seriousness of coronary disease.

The immediate mortality during the first 2 months after the attack was 23%. Obviously, many cases of recent myocardial infarction succumb before they reach a hospital and have an electrocardiogram taken. Others do not have a characteristic clinical picture or electrocardiogram and thus may be overlooked. The immediate mortality presented, therefore, applies only to the restricted circumstances of selection. It is, however, useful practically because this group which the authors selected is the group for whom immediate therapy is planned.

Among the factors affecting the prognosis, age was of some importance. The average age of those who survived over 10 years was 6 years less than the average age of those who died within 2 months; the long-term prognosis is, therefore, better in younger patients. This is true of females as well as males.

Males were noted to have a slightly better prognosis than females. This difference is probably due to the fact that males were on the average 5 years younger than the females in this series.

Hypertension before or during the attack apparently had no effect on the immediate mortality, its absence definitely increases the long-term survival. Thus, only 25% of the patients who lived over 10 years were hypertensive compared with 45% in the whole series who were hypertensive. Hypertension is a more frequent finding in the older than in the younger age group. It was also more frequent in females than males, especially in those over 60 years of age.

Angina pectoris was present in 60% of the cases prior to the first infarct. The absence of angina had no effect on the immediate prognosis and only a slight beneficial effect on the long-term survival.

The complication of congestive failure during myocardial infarction definitely contributed to augment the immediate mortality; 71% of those who died within 2 months had this complication, compared with 40% in the entire series. Furthermore, over half (75 of the 144 cases) of the congestive failure cases occurred in those who died within 2 months after the infarction. The chance for long-term survival was diminished by the presence of congestive failure at the time of infarction.

Almost two-thirds of the survivors were able to return to moderate or complete activity after recovery from the first attack of myocardial infarction. One-fourth were definitely restricted in their activities and one-tenth of the cases were bedridden. Although a large percentage of survivors had dyspnea and angina pectoris on exertion after recovery from their infarction, these complaints were not of sufficient frequency or intensity to reduce markedly the activity of almost two-thirds of the cases. The degree of angina pectoris and dyspnea was not graded in this study as to severity, but it is apparent that those who were able to return to moderate or complete activity had only mild symptoms.

This study suggests that the long-term survival time of recent myocardial infarction is better than that previously estimated, especially for the first episode. The implications of this in evaluating the role of prophylactic surgery or major medicinal regimens are obvious. The possibility of restitution to full activity is real for many persons surviving a myocardial infarction. (Circulation, Mar. 1954, D. R. Cole, M. D., E. B. Singian, M. D., and L. N. Katz, M. D.; Medical Research Institute, Michael Reese Hospital, Chicago, Ill.)

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Treatment of Tuberculous Meningitis

In the 7 years that have elapsed since the first clinical use of streptomycin in the treatment of tuberculous meningitis, repeated studies have demonstrated the ability of this drug to influence favorably the course of this infection. Prior to the discovery of streptomycin, meningeal tuberculosis ran a rapid and fatal course. With the aid of this new and potent drug, many lives were prolonged, meningeal infection was apparently controlled, and a few patients were returned to their normal ways of life.

Shortly after the introduction of streptomycin, numerous studies on the human absorption, distribution, and excretion of this new substance were performed. The diffusion of parenterally administered streptomycin across an inflamed meningeal surface into the cerebrospinal fluid in therapeutic quantities was well established.

This report is concerned with a study of 46 consecutively treated adult patients with tuberculous meningitis, studied on the Chest Service at Fitzsimons Army Hospital during the 5-year period from 1948 to 1953. The

study was originally undertaken primarily to evaluate the role of parenteral streptomycin in the treatment of this disease in the adult patient. While pursuing this study, concepts dealing with the total duration of successful chemotherapy and the proper combination of drugs gradually evolved which greatly modified the original scope of this study.

For the past year the following has been the standard treatment of meningeal tuberculosis employed at this hospital. Streptomycin, 2 gm. daily, in divided parenteral doses is given for a period of 2 months. The dose is then reduced to 1 gm. daily and continued until the cerebrospinal fluid findings have returned to normal. Thereafter, it is continued in intermittent dosage of 1 gm. every third day for a period of at least 6 additional months. Isoniazid and PAS are given concurrently, the former in divided oral doses totaling 600 to 750 mg. daily, and the latter orally, 12 gm. daily. Eleven patients have been started on this newest plan of treatment. Whenever indicated by the presence of serious extrameningeal tuberculosis, chemotherapy is extended beyond the 6-month period following the return of the cerebrospinal fluid findings to normal.

Following completion of chemotherapy, all patients were observed for a period of at least 6 months on a program of progressive ambulation and vocational rehabilitation prior to discharge from the hospital.

It appears that, with present-day management of meningeal tuberculosis, approximately one-half of those treated can be expected to survive. The exact figures will vary considerably depending on the ages of the patients and the length of follow-up. In the present study it was demonstrated that a survival rate of approximately 50% can be obtained by prolonged conservative management without the use of intrathecal drugs. Furthermore, the data suggest that survival may be closely related to the extent of extrameningeal tuberculosis present and to the individual host response to the meningeal infection. These factors appeared to influence mortality as much as did the type of regimen employed or the drug concentrations achieved in the cerebrospinal fluid. (Am. Rev. Tuberc., Mar. 1954, M. J. Fitzpatrick, Department of Medicine, University of Kansas Medical Center, Kansas City, Kans.)

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Tourniquet Paralysis Syndrome

A tourniquet is usually applied as a first-aid measure to stop bleeding when blood vessels are damaged. It is also widely used in orthopedic, nerve, or plastic surgery when a bloodless field is required.

Paralysis induced by a tourniquet is said to be rare, and very few cases have been reported in the literature. The statistics would probably be increased if more physicians were aware of the existence of the characteristic clinical syndrome which may follow the application of a tourniquet.

This complication can be overlooked for several reasons. First, the paralysis and the associated phenomena can be of relatively short duration. Second, the lesion can be a mild one and result in an incomplete paralysis, which may be interpreted as difficulty in moving the parts because of the surgery. Third, the sensory examination is usually confined to the testing of pain sensation with a pin prick and, because of the supposedly normal sensory findings, the incomplete or even complete paralysis is often erroneously diagnosed as hysterical.

The symptoms observed in tourniquet paralysis can be identical with those seen in some cases of pressure paralysis.

In cases of tourniquet paralysis an analysis of the different sensations is relatively easy, because there is usually a very slow return of the different functions. The electrical and sensory tests can be repeated many times on one patient, and the findings can be checked from day to day. In some of these cases the patients were followed for many weeks until complete recovery occurred.

It is also interesting to point out that in none of the patients examined was there any spontaneous pain or any paresthesia that would interfere with the study of the defects in sensations.

Seven cases of complete paralysis resulting from the use of tourniquet were studied. Three were induced by rubber tube, 2 were the result of Esmarch bandages, and 2 were due to the use of an inflated cuff. In addition, to those 7 cases of tourniquet paralysis, over 100 cases of pressure paralysis of different nerves were examined. These cases may have had quite similar symptoms and will be the subject of a later report.

Two cases of tourniquet paralysis syndrome are described in detail.

It is well known that the number of cases of tourniquet paralysis has decreased since the use of the thick rubber tube has been avoided and the Esmarch bandage or, rather, the inflated cuff has been used. This by itself indicates that ischemia most likely is not the cause of the complications resulting from the application of the tourniquet, because ischemia should be the same for any tourniquet, but that the mechanical pressure plays a greater role, if not the only one, in the etiology of the paralysis. The tourniquet should be applied where the nerves are best protected by the muscles and, if possible, should avoid compressing them against bony structures.

There is a constellation of symptoms that justify the term syndrome. The characteristics of this syndrome are as follows: Motor function: There is a paralysis with hypotonia or atonia, but no appreciable atrophy. Sensory examination shows a dissociation of the sensations. The fibers subserving touch, pressure, vibration, and position sense are affected, and those sensations are usually absent. Pain sensation is never lost. In most of the cases there is actual hyperalgesia, that is, the pain is felt with a low threshold. In severe cases the first or fast pain can be affected. Heat and

cold sensations are usually not affected or slightly disturbed. There is no paresthesia or tinglings after release of the tourniquet, which is indicative of a block of the touch fibers, responsible for the tingling sensation. There is no Tinel's sign. There is no sign of neuroma at the site of the injury. Sympathetic fibers are not affected. Pilomotor reflex is normal. Skin resistance is normal. Color of the limb is normal. Plethysmographic findings are normal. Temperature of the skin is normal. Electrical studies show that there is a block of conduction characterized by lack of response to stimulation of the motor nerve above the injury, a good response below the injury. There is no tingling sensation to stimulation of the sensory fibers distal to the site of injury, but there is a tingling sensation when the nerve is stimulated proximal to the lesion. The electrical stimulation can localize the level of the lesion. (Arch. Surg., Feb. 1954, J. Moldaver, M. D.; Columbia University College of Physicians and Surgeons, New York, N. Y.)

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Cholecystography

Oral cholecystography implies passage of the contrast medium through the pylorus into the small bowel, where it is absorbed by the portal circulation and carried to the liver. In the presence of adequate hepatic function, bile is secreted by the liver cells and flows down the hepatic ducts. In the fasting state, the bile is unable to enter the duodenum because of the normal tonicity of the choledochal sphincter mechanism. When the intracholedochal pressure reaches a height of from 50 to 70 mm. of water, the bile is forced up into the cystic duct and thence into the gallbladder, where it is concentrated and stored.

In the fasting state, the gallbladder is not stimulated to contract and may not empty itself for many days. Following the ingestion of fat, however, the hormone cholecystokinin is liberated from the intestinal mucosa and causes contraction of the gallbladder. Simultaneous relaxation of the choledochal sphincter results in expulsion of the concentrated bile into the duodenum. Cholecystokinin acts directly on the muscularis of the gallbladder. This has been demonstrated by numerous investigators who sectioned the vagus and splanchnic nerves without influencing gallbladder contractility.

Hydrochloric acid has a similar though less marked effect on gallbladder contraction. Thus, in individuals with hyperchlorhydria (e. g., duodenal ulcer), the gallbladder may contract vigorously and empty itself early. If, therefore, films are made at the conventional time (12 to 16 hours after the contrast medium has been ingested) an erroneous diagnosis of a nonfunctioning gallbladder may be made.

The effect of achlorhydria, on the other hand, is not nearly so well understood, and the experimental and clinical data pertaining to this matter appear to be contradictory.

Drugs may considerably alter the normal motor response of the gallbladder. Thus, morphine sulfate and its derivatives produce profound spasm of the choledochal sphincter, while amyl nitrite, atropine, and other nitrites evoke relaxation of the sphincter mechanism. Magnesium sulfate, epinephrine, pituitrin, acetyl choline, eserine, and histamine may also excite gallbladder contraction with simultaneous sphincteric relaxation. The effect of the latter drugs, however, is not constant. Sodium hydroxide and sodium bicarbonate, on the other hand, produce synchronous relaxation of the gallbladder, together with closure of the choledochal sphincter.

Curl and Brewer have shown that in normal subjects on a prolonged fat-free diet the gallbladder does not empty satisfactorily and becomes filled with thick, concentrated bile. Consequently, when cholecystography is attempted, the fresh bile, laden with the contrast material, is unable to enter the gallbladder, thus resulting in poor or nonvisualization. When emptying is obtained in these patients by a fatty meal, re-examination demonstrates normal concentration of the medium.

Nonvisualization or poor visualization, then, may be due to a variety of factors, many of which are extracholecystic in origin:

1. Failure of the patient to ingest or retain the contrast substance.
2. Delayed gastric emptying.
   (a) Pyloroduodenal obstruction
   (b) Psychogenic factors resulting in prolonged pylorospasm.
3. Failure of absorption of the medium.
   (a) Diarrhea
   (b) Pancreatic disease
   (c) Primary disease of the small intestine.
4. Impairment of hepatic function.
5. Too rapid emptying of the gallbladder, e.g., hyperchlorhydria.
6. Physiological stasis.
7. Drug effect.
8. Previous cholecystectomy.
9. Cystic duct stone.
10. Severe disease of the gallbladder mucosa preventing adequate concentration of the medium.
11. Lactation. Olsson has demonstrated that nonvisualization may occur in lactating mothers due to excretion of tetraiodophenolphthalein in the milk.

(Radiology, Feb. 1954, R. Shapiro, M.D.; Yale University School of Medicine, New Haven, Conn.)

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Management of Acute Ocular Lime Burns

Lime burns of the eye are always potentially destructive to vision as well as being extremely painful to the patient. One of the authors (W.Z.R.)

recently treated 4 cases of this type of chemical injury with a method not previously described in the literature. Because the clinical results were most gratifying, the authors carried out some experimental work which indicates that this type of treatment is superior to other treatments in use at the present time.

The plan of treatment suggested for this type of injury is: (1) Immediate thorough irrigation with water at the scene of the accident. Neutralization of the alkali with weak acids should not be attempted because it may be harmful. (2) Local cortisone every 2 hours while awake; as healing occurs, this dosage is reduced. (3) Sulfonamide or antibiotic preparations locally every 2 hours while awake; later reduced as is the cortisone. (4) Atropine (1.0%) 3 times daily; 10% aqueous neosynephrine can be used concurrently if pupillary dilatation is poor. (5) Involved eye padded, with Vaseline or similar lubricant applied to under surface, until all corneal staining has ceased. (6) Moist heat 3 or 4 times daily until the eye is white. (7) Various local anesthetic preparations can be used to help ease severe pain, but their use should be discouraged. (8) Codeine and salicylate drugs are prescribed to control pain and barbiturates to promote rest.

The use of cortisone locally appears to promote more rapid clearing of the stromal infiltration and opacification and to decrease the inflammatory reaction to the alkali faster than either Hydrosulphosol or ammonium tartrate. Several investigations have revealed inhibition of epithelial regeneration. However, the authors' findings indicate inhibition of stromal inflammation, and thus much less scar tissue, but no retardation of epithelial regeneration. The authors believe that cortisone may even promote more rapid corneal epithelial regeneration.

There was no tendency to symblepharon formation in any of the reported cases or in the rabbit eyes. This is probably due to the known action of cortisone in delaying and reducing fibroblastic proliferation in inflamed tissue.

No corneal vascularization occurred in the human eyes. This may have been prevented by the use of cortisone. Vascularization was not included in the criteria used in the experimental data on the rabbit eyes.

Atropine relieves the irritative iritis and appears to contribute materially to the relief of pain. Because cortisone has no bacteriostatic property, the use of a sulfonamide or antibiotic preparation to prevent secondary infection is essential. It appeared to make no difference in this small series of cases whether drugs were used in drop or ointment form. It must be noted that trapping of ointment beneath regenerating epithelial cells may, however, lead to later corneal erosion. With this possibility in mind it might be better to use collyria.

Padding the involved eye until all corneal staining with fluorescein has ceased is indicated to control photophobia and to prevent movement of the lids over the cornea. Care should be taken to place a protective film of

Vaseline or similar substance on the pad surface in contact with the lids to prevent further corneal damage should the lids become separated beneath the pad.

Most patients with chemical injuries can be ambulatory. However, if the burn is extremely severe, or if both eyes are involved, hospitalization is indicated.

It is realized that the series of cases treated by this method is small and the experimental data are limited. However, the method described seems to be superior to those in use at the present time and definitely deserves more extensive trial. (Am. J. Ophthalmol., Feb. 1954, W. Z. Rundles, Jr., M. D., and J. R. Quinn, M. D.; 304 National Building, University Hospital, University of Michigan, Ann Arbor, Mich.)

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Epithelial Tumors of the Eyelids

Most malignant lesions of the skin are superficial, slow growing, and easily diagnosed. They have a high rate of curability when diagnosed early and treated properly.

Approximately 85% of all skin cancers are found in the regions of the head and neck. The incidence of epithelioma of the eyelid is estimated by various authorities to be from 2.5 to 16.8%.

Lesions of the eyelid usually attract the early attention of the patient because of their exposed position on the face and their frequent interference with normal lid function. At this juncture complete excision may be performed with minimal lid deformity or functional disturbance. When, however, through a patient's ignorance or reticence or a physician's timidity and inadequate therapy, the lesion extends to invade deep eyelid structures, orbital contents, or orbital bone, a cure may be effected only by more radical procedures and by full thickness reconstruction. The presence of a functioning eyelid is indispensable to good vision; therefore, the surgeon is faced at this point with a difficult and challenging problem.

This article analyzes 60 cases of epithelioma of the eyelids treated by the authors, with special reference to total and subtotal reconstruction.

There is no significant difference between sexes in the incidence of epithelioma of the eyelid. Women are subject to the disease with the same frequency as men, although in the authors' series the ratio of male to female was 3 to 2.

The highest incidence of epithelioma of the eyelid in the authors' series occurred in the sixth decade. The distribution by age of these 60 cases was as follows: 3 were from 21 to 30 years of age, 5 from 31 to 40, 10 from 41 to 50, 20 from 51 to 60, 12 from 61 to 70, 7 from 71 to 80, and 3 were over 80 years of age.

The lower eyelid and the inner canthus are the regions most commonly involved in neoplasms of the eyelid. In the authors' series 60% (36 cases, 5 involving deeper structures) of the epitheliomas occurred on the lower lid and 20% (12 cases, 1 involving deeper structures) at the inner canthus. The other 20% involved the outer canthus in 3 cases (5%), the upper eyelid in 4 cases (7%), the eyebrow region in 2 cases (3%), and both eyelids in 3 cases (5%) in which the deeper structures were involved.

The primary aim of treatment is complete extirpation of the neoplasm which should be accomplished in the shortest possible time with minimal structural deformity and functional impairment of the eyelids.

In the selection of a form of therapy for the early lesion, the physician may be guided by the availability of experienced therapists, because equally admirable results have been reported by qualified surgeons and radiotherapists. The authors, however, favor surgical excision for the following reasons: (1) Complications, such as cataract, extensive and deforming cicatrization of the eyelid, persistent conjunctivitis, and stenosis of the tear duct, are still of a sufficiently high incidence to present a problem after a curative dose of irradiation. (2) Because the treatmentof these lesions with irradiation is generally performed without the benefit of a biopsy, the physician is deprived of a microscopic confirmation of the clinical diagnosis. Radioresistant lesions may be treated for extensive periods of time with prolonged ineffective irradiation, following which the hope of permanent cure may be lost or may be accomplished only with considerable difficulty. (3) Advanced lesions may not be satisfactorily controlled by radiation if they involve deep structures, such as orbital invasion or facial bone involvement. (4) Following a satisfactory response to radiation therapy by gross examination of the region of the neoplasm, there is no confirmation of complete destruction of the lesion. A sectional examination of the surgical specimen, on the other hand, gives microscopic evidence of the completeness of the surgical excision and provides the soundest basis for accurate prognosis. (5) The present availability of many varied plastic reconstructive procedures makes possible radical extensive excision, which is rarely followed by marked deformity or impaired function, even in advanced cases. (6) When a previously irradiated lesion does recur, it is invariably radioresistant and requires surgery. Surgical excision of such a lesion requires eradication not only of the recurrent lesion, but also of the entire irradiated area, transforming what originally might have been a simple reconstruction to one of major complexity.

A detailed description of the authors' technique in total and subtotal full thickness reconstruction of the eyelid is presented, stressing the use of the following: (a) Immediate full thickness skin grafts for skin coverage, (b) fine stainless steel wire "pull out" sutures for tarsoconjunctival approximation, and (c) flap shift from the upper lid for eyelash transplant to the reconstructed lower lid.

Cases are presented to illustrate the major types of eyelid reconstruction used by the authors. (Surg., Gynec. & Obst., Mar. 1954, W. B. Macomber, M. D., M. Ksi-Hsi Wang, M. D., and E. Gottlieb, M. D.; Department of Surgery, Plastic Surgery Division, Albany Hospital, Albany, N. Y.)

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Angiomatosis Retinae

Angiomatosis retinae (von Hippel's disease) is a comparatively rare disease characterized by the presence of one or more hemangioblastomas of the retina and the destructive changes secondary to these tumors. It was first described in 1879 by Panas and Remy and thereafter by several authors under a variety of titles until 1904, when von Hippel established angiomatosis retinae as a clinical entity. However, the relation between this retinal disease and systemic disturbances, particularly cystic hemangioblastomas of the central nervous system, was not fully appreciated until the monumental work of Lindau was published in 1926. After the pathologic process had been defined the number of observations increased rapidly, and in 1943 Cordes and Dickson noted approximately 160 cases cited in the literature.

Angiomatosis retinae typically appears in young adults and is most commonly noted in the third decade of life, though it has been detected in a fetus and in a 50-year-old woman. Males are affected more frequently than females in the ratio of 62:38. Either eye may be involved, and in 50% of the cases the process is bilateral.

The influence of heredity is definite, and a familial factor can be demonstrated in 20% of the cases. When such a factor is present, the disease is usually transmitted as an irregular mendelian dominant without evidence of sex linkage.

Diagnosis of this disease may be difficult because the disorder is slowly progressive and appearance of the fundus varies greatly at different stages of clinical evolution. Perhaps the earliest demonstrable alteration in the fundus is fullness of a retinal vein, proceeding to immense dilatation of this vein and its parallel coursing branch of the central retinal artery. These vessels may demonstrate a wide variety of physical signs, and common findings are marked tortuosity, loops, and kinks, in addition to variations in caliber noted typically as beading or segmentation of the arterial branches.

These engorged vessels extend for a variable distance from the optic disk and, usually in the extreme temporal periphery of the fundus, terminate in a fan-shaped anastomosis between the two vessels. From this area of anastomosis the characteristic neoplastic lesion of angiomatosis retinae develops. This lesion is a round or oval, sharply outlined, globular mass that is cherry red to pale pink. The tumors vary in dimension--up to several disk

diameters in extent--and as many as three separate tumors have been present in a single eye.

As the pathologic evolution continues, tiny yellowish flecks of exudate appear near the tumor, along the course of the feeding vessels, in the macular area, and near the disk. Occurrence of exudative changes at a distance from the angiomatous lesion attests to the wide extent of the ocular disturbance and leads to the formation of confluent sheets of subretinal exudate. Hemorrhages into the retina or vitreous may occur during the development of these vascular and exudative alterations but, generally, do not constitute a major feature of the disease.

Retinal detachment may precede the exudative changes, occur simultaneously with them, or develop at a later stage. Initially, detachment appears as a small area in the periphery or as one or more bullous elevations, but eventually the retina becomes completely detached.

The final stages of the process are dominated by an iridocyclitis, complicated cataract, and a painful secondary glaucoma leading to further destruction and terminating in phthisis bulbi.

Although hemangioblastoma of the retina does not metastasize, treatment is definitely indicated in view of the loss of vision and destruction of the globe resulting from progressive disease. The need for effective therapy is emphasized by the high incidence of binocular involvement with its attendant blindness. However, all authors agree that treatment is difficult and success possible only when the tumor can be destroyed or arrested in its early stages. The two principal types of treatment are irradiation and electrosurgery. (New England J. Med., Feb. 25, 1954, B.R. Straatsma, M.D.; U.S. Naval Hospital, Portsmouth, Va.)

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Degenerative Joint Disease

Degenerative arthritis is commonly thought to be the result of wear and tear processes, yet there is so much difference in the development of arthritic changes in different individuals that other factors must be sought to explain these variations. These factors may be congenital, developmental, or environmental in character.

Early recognition and correction of developmental anomalies will lessen joint changes and favor normal growth.

Because many of the degenerative changes of the spine arise from poor postural balance, the importance of establishing proper postural habits during early childhood cannot be overstressed. Nutritional conditions, such as rickets and scurvy, are not often seen in severe forms but must always be borne in mind. The physician must be alert to the possibility of epiphyseal changes such as Perthes' disease, Kohler's disease, and vertebral epiphysitis. Endocrine factors play a large part in the etiology of these

conditions and any evidence of retarded development should suggest thorough investigation of any unexplained joint symptoms occurring during the rapid growth periods from 5 to 8 years and from 10 to 14 years.

The cervical spine is one of the regions most commonly involved by degenerative joint disease. The symptom complex that arises, often referred to as the cervical tension syndrome, consists of aching in the cervical region, with pain, soreness, cricks in the neck, and tiring. Basilar types of headache are common and occasionally pain may be referred to temporal or frontal areas. Pain may also be referred to shoulder, arm, or even hand. Occasionally anginal types of pain are secondary to changes in the cervical spine. Probably most of the pain in shoulder, arm, or hand in persons over 40 has its basis in changes occurring in the cervical spine.

Thorough medical evaluation and the use of all measures to improve the general well-being of the patient are necessary.

Degenerative changes throughout the dorsal spine often lead to obscure visceral complaints that are difficult to evaluate. It is probable that many patients are needlessly treated for such complaints that arise secondary to these changes. Osteomalacia tends to develop in the older person, either as a result of hormonal disturbances, or secondary to nutritional inadequacies. Symptoms arising in women shortly after the menopause should be evaluated critically and will, at times, respond quite dramatically to judicious hormone therapy. Decalcification of the spine is often due to hormonal insufficiency, and even though there is quick response to treatment, continuous therapy is necessary over several years until calcification is again normal. Decalcification occurs most often following artificial menopause and a balanced program of androgen-estrogen therapy is desirable in such cases.

Inadequate protein intake is common in the older age group and frequently causes decalcification. The use of supplementary protein feedings with additional vitamin and mineral elements is most helpful in these cases. Chronic renal disease can also deplete the calcium reserve as it is used to buffer acids when the kidney is unable to form ammonia.

During the active years of life the lumbosacral spine is exposed to severe degrees of stress. Excessive strain should be avoided, because there is normally considerable loss of elasticity of the intervertebral bodies. Older persons should not lift objects or grandchildren from the floor without bending the knees as lifting causes a severe strain upon the lower lumbar joints. The general recognition of the intervertebral disk herniation syndrome has led to a better understanding of the pathology and management of acute low back strains. Most of these cases can be managed by conservative measures but occasionally surgery is necessary.

The hip joint is often involved in degenerative changes, marked by such symptoms as tiring on walking and catches in the hip. Later, there is restriction of internal and external rotation with loss of abduction.

Flexion and extension often remain quite good but there is a gradual development of adduction with an apparent shortening of the leg and eventual flexion contractures of thigh and knee. Pain may be referred to the region of the knee. X-ray examination shows narrowing of the joint space with enlargement of femoral head and arthritic lipping.

Due to its exposed position, the knee joint is subject to numerous strains and injuries and arthritic changes are frequent. Arthritic lipping develops and there is frequent erosion of the joint cartilage between the patella and the femoral condyles. Athletic injuries to the ligaments and to the semilunar cartilages predispose to later arthritis and it seems probable that early correction of internal derangements will lessen the likelihood of early arthritic changes.

The joints of ankle and foot are subject to stress; structural changes are common. Bunions and toe deformities often follow improper fitting of shoes or primary structural defects. A great deal can be done in both the prevention and correction of these conditions. Plastic correction of the bunion deformity with realignment of the forefoot can be carried out in the less severe cases while Keller's procedure offers improved comfort to the more severely involved joints. Surgical correction of hammer toe deformity affords great relief and permits the patient to wear a more normal type of shoe with comfort. (Geriatrics, Mar. 1954, C. F. Ferciot, M. D.; Creighton University, Omaha, Nebr.)

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The Amputation Center, U. S. Naval Hospital, Oakland, Calif.

The Navy Amputation Center attempts to provide the following coordinated services for amputee patients admitted to the hospital: (1) Proper and adequate medical and surgical care. (2) Optimum physical reconditioning of each amputee patient. (3) The manufacture and fitting of individually made artificial limbs reflecting the most advanced design, utility, and comfort possible. (4) Thorough training in efficient and effective use of prosthesis provided. (5) Vocational training, educational services, and advisement. (6) Psychological adjustment to the handicap. (7) Selective job placement. (8) Research and developmental studies of devices, manufacturing processes, and rehabilitation techniques.

Research and developmental studies on artificial limbs, orthopedic devices, and rehabilitative methods have been continuously conducted since the designation of this Center in 1943. Major emphasis of the department, fortunately, may be easily shifted to high production or to research studies as dictated by the patient census. Research efforts are at all times directed toward origination of new devices with practical and applicable values and toward improvement of materials, methods, and techniques. Evaluation of all data proceeds through systematic processes which may be generally

stated as designing, laboratory testing, fitting upon selected pilot wearers, and, finally, comprehensive field testing following discharge of subjects from the hospital. Data gathered from representative numbers of such amputee subjects serve as the basis for final reports on each research project.

Of major importance in the research program in operation at this Center is the method of conducting field studies and recording the results. A system of securing, classifying, and recording research data from former patients in the field has been organized and is now in operation. A complete system of cross-indexed cards recording appropriate information on patients and their experiences with research devices under study is believed to be the most comprehensive pool of information of its type in the nation.

The Center includes sections devoted to woodworking, machine shop, fitting room, complete artificial limb and brace shop, drafting room, University of California Research Unit, plaster casting, plastics section, testing equipment, finishing section, photographic facilities, both motion and still, stores section, and the necessary office space for the Director, shop superintendent, and clerical forces. Ramps are provided for wheelchair patients and provision has been made for extensive expansion if necessary.

The Center is a contributing member of the Advisory Committee on Artificial Limbs of the National Research Council and maintains affiliation and liaison with the Veterans Administration's Office of Vocational Rehabilitation, other branches of the Armed Forces, and civilian artificial limb and brace manufacturers.

The present personnel of the Center consists of 2 officers, 7 enlisted USN, 18 enlisted students (15 Navy, 3 Air Force), and 12 civilian employees.

Among the more significant research projects now under investigation are: (1)functional elbow and wrist joints for artificial arms; (2) nylon harness for artificial limbs and braces; (3) below-knee and hip joints of 75ST-6 forged aluminum; (4) impression methods for below-knee plaster reproductions; (5) soft below-knee socket for artificial legs; (6) the Navy-Fitch artificial arm; (7) functional full-length leg brace; (8) suction socket for below-knee artificial legs; (9) cineplastic above-elbow prosthesis using biceps and pectoralis motors; (10) functional ankle (cable) for artificial legs; (11) a variable cadence knee mechanism for above-knee prostheses; and (12) a tilting-table prosthesis for hip disarticulations. (Research Div., BuMed)
(See also U.S. Navy Medical News Letter, Vol. 17, No. 1, p. 7)

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The Use of Hypothermia in Cardiac Surgery

If it is the surgeon's intention to open a cardiac chamber or to interrupt the circulation during the performance of an operation, hypothermia is certainly indicated. An effective and reliable heart-lung apparatus might

be a better answer to the problem involved here, but until it is perfected, hypothermia best fills the need. Intra-arterial transfusion is a necessary adjunct.

At present the authors believe that hypothermia is indicated as part of the anesthetic regimen in all severely cyanotic and disabled infants who are to undergo cardiac surgery of any nature. The optimum range of temperature is probably 23.3° to 26.1° C. (74° to 79° F.).

The presence of moderate cyanosis and disability in infants and children who are to undergo such time-consuming procedures as Blalock or Potts anastomosis, transposition of pulmonary veins, et cetera, would indicate the production of low body temperature during surgery as a means of decreasing oxygen demand. The level in these cases may be higher, but probably should be near 31.1° C. (88° F.).

In the series of 16 patients, the ages ranged from 10 days to 33 years. The temperature at which surgery was performed ranged from 20° to 31.1° C. (68° to 88° F.). A variety of cardiac lesions was operated upon: atrial septal defect, ventricular septal defect, the tetralogy of Fallot, transposition of the great vessels, the Taussig-Bing syndrome with pulmonary stenosis, nonfunctioning right ventricle, mitral insufficiency, and aortic insufficiency.

Eleven patients died (68.7%), 8 in the operating room, 1 at approximately 30 hours, 1 at 12 hours, and 1 at 8 hours. Among those who died were 4 with transposition (100%), 2 with the tetralogy of Fallot (50%), 1 with nonfunctioning right ventricle, 2 with atrial septal defect (66.6%), and 2 patients with acquired heart disease (100%). In these, the temperature reached before operation began embraced the range: 20° to 31.1° C.

Tentative conclusions in regard to indications and contraindications for the use of hypothermia may be drawn from this small series of patients. As more is learned of this modality, changes will undoubtedly be made.

The chief contraindication to the use of hypothermia is the presence of a noncyanotic lesion for which the surgical technique does not require interruption of the circulation. Atrio-septo-pexy, mitral or aortic commissurotomy, and mitral commissurorrhaphy are examples. There is probably an inherent factor in acquired lesions which contraindicates the production of low body temperature, and that is myocardial damage. Arrhythmias are more prone to develop.

Advanced age is also a contraindication. Ideal in infants and young children, hypothermia should be used cautiously in older children and should be avoided in those over the age of 10 years. (J. Pediat., Feb. 1954, D. F. Downing, M. D., B. A. Cookson, M. B., Ch. B. (Edinburgh), K. K. Keown, M. D., and C. P. Bailey, M. D.; Division of Pediatrics and the Departments of Anesthesiology and Thoracic Surgery, Hahnemann Medical College and the Bailey Thoracic Clinic, Philadelphia, Pa.)

Daylight Processing of Dental Film

Daylight processing of x-ray film is not a new idea. A patent on the concept of daylight processing of dental x-ray film was granted about 1935, although the problem was admittedly unsolved. The following solution to the problem was developed and successfully used on the dental-sized film.

To effect daylight development by the present method, the dental film must be packaged in paper opaque to light but permeable to the film processing solutions. Such opaque, permeable sheets are substituted for the black paper light shields of the current film package, then sealed at the edges, the foil shield added, and the package circumscribed by the conventional pebble grain cover. In use, the film is given a normal exposure, the outer pebble covering and foil shield removed, and the dental film, encased in the opaque bag, processed in open trays or deep tanks in the lighted dental office. When fixing is completed, the film may be removed from the encompassing bag and washed.

When immersed in the developer, the inner wrapper "ballooned" away from the film, allowing rapid wetting of the film and permitting the normal processing time to be unchanged.

For most prosthodontic and endodontic cases, or in the latter cases where broken root tips must be located, a partial hypo fixation may be used because the film is discarded after observation. For permanent file, complete fixation times must be employed.

Two types of "versatile" packaging paper were used in the laboratory experiments although possibly a large number of similar materials could be equally effective. Thin chemical filter paper was used successfully but alternately, and possibly the material of choice was the paper bags used in the individual or "personal" tea bags. Both of these papers were permeable and nonadherent to the x-ray film when wet with the developing solutions.

In the authors' experiments, the packaging paper (tea bags or filter paper) was rendered light opaque by dyeing with a vegetable dye (Tintex or similar dyes). The unexposed dental film (in the darkroom) was encased in the dyed paper and a light-tight seal obtained by glueing with hot animal glue. Application of the foil shields and outer pebble cover readied the unit for exposure. (Memorandum Report 53-18, Project NM 000 018.07, 28 Oct 1953, Naval Medical Research Institute, NNMC, Bethesda 14, Md.; E. Kafig and J L. Nemes)

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Report of Prosthetic Dental Treatment

In the interest of economy, Reports of Prosthetic Dental Treatment, NavMed L, should be submitted to the Bureau by regular mail rather than by Air Mail. The reports are submitted for each patient who receives pros-

thetic dental treatment during a month. Because these reports comprise considerable bulk, the Air Mail postage they require is a significant amount. (DentDiv, BuMed)

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Training Course in Field Medicine

A course in field medicine is scheduled to be conducted at Camp Joseph H. Pendleton, Oceanside, Calif., on 17 May 1954 for the benefit of Naval Reserve male medical personnel residing in the 11th, 12th, and 13th Naval Districts.

The course is of 2 weeks' duration and is designed to provide specialized training in field medicine including practical instruction in medical material logistics, preventive medicine in the field, professional treatment of emergencies, and medical organization with Fleet Marine Units. In addition, the trainee will receive practical instruction of a military nature including the maintenance and use of small arms, items of individual equipment, practical march and bivouac.

Eligible personnel who desire to attend this course in a pay status should submit their request to the Commandant of their home naval district at the earliest practicable date. Attention is invited to the fact that attendance at this course will not, in any way, increase the Reservist's vulnerability for orders to extended active duty. (Reserve Div., BuMed)

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Reserve Selection Board for Promotion to Lieutenant

A selection board is scheduled to convene at the Navy Department, Washington, D.C., on or about 11 May 1954 to recommend Naval Reserve officers of the Medical, Dental, Medical Service, and Nurse Corps on inactive duty for promotion to lieutenant. Officers eligible for consideration by this board are lieutenants (junior grade) on inactive duty in an active status or who reported for extended active duty subsequent to 1 January 1954 whose date of rank is on or before 5 June 1951.

Individual officers concerned should take necessary action to insure that fitness reports for training duty, annual fitness reports, and annual qualification questionnaires covering periods ending prior to the convening date are submitted to the Bureau of Naval Personnel in time to be included in the officer's records when presented to the selection board.

Naval Reserve medical officers on inactive duty from different geographical sections of the country will constitute the majority membership of the board. (Reserve Div., BuMed)

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From the Note Book

1. CDR Wilma L. Jackson (NC) USN has been selected to be the next Director of the Navy Nurse Corps. She will succeed CAPT Winnie Gibson (NC) USN who is scheduled for retirement 1 May 1954. Commander Jackson, now serving as Chief of the Nursing Service, U. S. Naval Hospital, Portsmouth Va., will report to the Bureau on or about 1 April 1954 for orientation prior to assuming her new duties. Commander Jackson was a prisoner of war following the capture of Guam, was interned on Guam for 7 months, then moved to Japan, and was one of the first group of war prisoners exchanged, returning to the United States on the Gripsholm. (DOD, PIO, 5 Mar 1954)

2. Rear Admiral Charles F. Behrens (MC) USN, District Medical Officer of the Sixth Naval District, on 22 Feb 1954 spoke before the Tri-State Medical meeting at Charleston, S. C. The subject of Admiral Behrens' talk was "Atomics and Modern Medicine." The presentation will probably be published in the Society's Medical Journal in the near future. (DMO, 6th ND)

3. Thirty-five Naval Reserve dental officers temporarily left their private practices to receive 2 weeks' active duty training at the Naval Dental School, National Naval Medical Center, Bethesda, Md. These officers attended the third course in medico-military matters conducted at the Naval Medical School during the period 8-20 Mar 1954. (TIO, BuMed)

4. Seven Navy Dental Corps officers presented essays on dental research studies at the 32nd General Meeting of the International Association for Dental Research at French Lick, Ind., 19-21 Mar 1954. Papers presented were: "Morphological Effects of Irradiation," CAPT James A. English (DC) USN; "Application of Freeze-Dried Bone Grafts in Cysts of the Jaw," CDR James A. Cooksey (DC) USN; "Application of Ultrasonics to the Cutting of Teeth," CDR Arne Nielsen (DC) USN; "Study of the Relationship of Decayed, Missing and Filled Teeth to Certain Aspects of Personality," LT John H. Manhold (DC) USN; "PH and Lactate Content of Caries-Immune Dental Plaques," LT Harold R. Englander (DC) USNR; "Some Factors Affecting the Dimensional Stability of Silver Amalgams," LT James A. Mitchell (DC) USN; and "Effects of Topical Fluoride on Dental Caries Experience of Adult Females," LT William J. Carter (DC) USN. (TIO, BuMed)

5. "Recommendations For The Disposal of Carbon-14 Wastes," National Bureau of Standards Handbook 53 may be ordered from the Government Printing Office, Washington 25, D. C. (NBS)

6. A method of needle biopsy of the liver using the transthoracic approach and a modified Vim-Silverman needle is described with its employment in

the training of personnel in liver biopsy. (Am. J. M. Sc., Feb. 1954, Col. R. S. Nelson, MC, USA; U. S. Army Hospital, Fort Knox, Ky.)

7. Cooling the precordial area of the chest wall gives rise to primary T-wave changes. It is suggested that these changes are due to delayed repolarization of the epicardial surface of the anterior heart wall resulting from the actual cooling of the surface of the heart in this region. (Am. Heart J., Mar. 1954, S. A. Rahman, M. D., R. N. Abhyankar, M. B., and T. Ali, M. B.; Osmania Medical College, Hyderabad, India)

8. One hundred and six cases of erythroblastosis fetalis treated with exchange transfusions are reported. There was an over-all mortality rate of 6.6%. (J. Pediat., Feb. 1954, F. Feldman, M. D., H. C. Lichtman, M. D., and V. Ginsberg, M. D.; Brooklyn, N. Y.)

9. In a group of 35 patients with rheumatoid arthritis there was evidence of grade II improvement in 16 patients following subcutaneous implantation of human placental tissue, the improvement has been maintained. (Geriatrics, Mar. 1954, R. M. Lintz, M. D.; Bellevue Hospital, New York, N. Y.)

10. Infantile cortical hyperostosis is the clinical manifestation of an inherited defect of the arterioles supplying the affected areas. The resulting hypoxia causes focal necrosis of the overlying soft tissues and proliferative reaction of the periosteum. (New England J. Med., 25 Feb. 1954, J. B. Sidbury, Jr., M. D. and J. B. Sidbury, M. D.; Wilmington, N. C.)

11. A case in which a 35-year-old male had an atherosclerotic aneurysm of the popliteal artery is reported. The importance of the physical examination in this diagnosis is emphasized and a plea made for surgical treatment because of the poor prognosis without treatment. (Circulation, Mar. 1954, R. W. Gifford, Jr. M. D., T. W. Parkin, M. D., and J. M. Janes, M. D.; Mayo Clinic, Rochester, Minn.)

12. The etiology, location, size, symptoms, signs, diagnosis, and treatment of diverticula of the female urethra are discussed in the American Journal of Obstetrics and Gynecology for March 1954, by C. R. A. Gilbert, M. D. and F. J. R. Cintron, M. D., Santurce, P. R.)

13. Cortisone has proved to be almost a specific in the treatment of Loeffler's syndrome. Cases treated responded within 5 days, the symptoms clearing within a maximum of 48 hours, and the lesion clearing completely in 5 days or less. (Dis. Chest, Feb. 1954, L. Mark, M. D. Columbus, Ohio)

14. A case of unilateral acquired anterior lenticonus is reported and consideration is given to etiology, clinical evolution, and treatment of this

entity. (Am. J. Ophth., Feb. 1954, LTJG B.R. Straatsma (MC) USNR, LTJG M. L. Caneilla (MC) USNR, and CAPT A.C. Hohn (MC) USN; U.S. Naval Hospital, Portsmouth, Va.)

15. A study of ototoxicity from intermittent streptomycin sulfate therapy of pulmonary tuberculosis appears in Archives of Ophthalmology for January 1954, Capt. H. L. Cline, MC, USA, Capt. J. H. Houseworth, MC, USA, and Capt. F. W. Pitts, MC, USA; Fitzsimons Army Hospital, Denver, Colo.

16. Clinical experience with the anticoagulant, Dipaxin (2-diphenylacetyl-1, 3-indandione) is reported in Circulation for February 1954 by L. R. Pascale, M. D. and J. H. Olwin, M. D.; Presbyterian Hospital, Chicago, Ill.

17. Granulomatous or giant cell thyroiditis is characterized by evidences of subacute, nonsuppurative inflammation of the thyroid gland and by a histologic spectrum of acute, subacute, and chronic inflammation with multinucleated giant cells and fibrosis. Synonyms for this disease are acute thyroiditis, acute nonsuppurative thyroiditis, subacute thyroiditis, pseudo-tuberculous thyroiditis, and de Quervain's thyroiditis. (Surg., Gynec. & Obst., Feb. 1954, S. Lindsay, M. D. and M. E. Dailey, M. D.; University of California School of Medicine, San Francisco, Calif.)

18. Dextran more nearly meets all the given criteria for a synthetic plasma volume expander than any other substance available at the present time. The low percentage of reactions encountered with its use compared to blood or plasma, make it safer to give to patients in shock or to patients under anesthesia in whom reactions are harder to detect. If patients can be brought out of shock with dextran, blood can then be given as a semi-emergency or elective procedure. (Ann. Surg., Feb. 1954, J. H. Harrison, M. D.; Emory University, Atlanta, Ga.)

19. A symposium on fundamental aspects of disease of the kidney appears in the 10 Feb 1954 issue of Proceedings of the Staff Meetings of the Mayo Clinic.

20. A fully automatic machine for weighing coins rapidly has been developed by M. L. Kuder and E. C. Palasky of the National Bureau of Standards at the request of the Department of the Treasury. The machine can weigh and sort 18,000 coins per hour with an accuracy of 1/4 of 1% in the weighing of 25-cent pieces and with even greater accuracy for the larger coins. This system has the advantages of high sensitivity, low susceptibility to seismic noise, and independence of other physical properties of the coin except the diameter, which is held to extremely close tolerances in manufacture. The machine is much faster than the automatically fed analytical beam balance now in use at the Mints. (TechNewsBul., N. B. S., Vol. 38, No. 3)

Recent Research Reports

Naval Medical Research Institute, NNMC, Bethesda, Md.

1. An Automatic Recording Impedance Bridge. NM 000 018.03.02, 25 Nov. 1953.
2. The Use of Small Laboratory Animals in Medical Radiation Biology: III. Reproducibility of the Lethal Effect of Total-Body Irradiation in Mice. NM 006 012.04.65, 24 Nov 1953.
3. A High-Speed, Recording Gradient Thermal Flowmeter for Studies of Local Thermal Injury and Superficial Circulation. NM 007 081.03.05, 17 Nov 1953.
4. Some Optical Observations on the Interaction Between Acetyl Cholinesterase and Its Substrate. NM 000 018.06.30, 7 Dec 1953.
5. Neoplasms in Rats Protected Against Lethal Doses of Irradiation by Parabiosis or Para-aminopropriophenone. NM 006 012.05.12, 20 Oct 1953.
6. Separation, Concentration, and Transfusion of Platelets. NM 006 012.05.05, 27 July 1953.
7. Reversible Association Process of Globular Proteins: V. The Study of Associating Systems by the Methods of Macromolecular Physics. NM 000 018.06.27, 16 July 1953.
8. Transfusion of Separated Leukocytes Into Irradiated Dogs With Aplastic Marrows. NM 006 012.05.11, 20 Oct 1953.
9. Endocrine Influences on Radiosensitivity. (A Review). Lecture and Review Series No. 53-8, 23 Nov 1953.
10. Ions, Potentials, and the Nerve Impulse. Lecture and Review Series No. 53-7, 17 Dec 1953.
11. Design and Construction of a Radiocobalt Large Animal Irradiator. NM 006 012.04.64, 2 Dec 1953.

Naval Medical Research Unit No. 3, Cairo, Egypt

1. The Loss and Redevelopment of Insecticide Resistance in Egyptian House Flies. NM 005 050.49.02, 1953.
2. Marking and Trapping Studies on Dispersal and Abundance of Egyptian House Flies. NM 005 050.49.03, 1953.

Naval Medical Research Unit No. 4, NTC, Great Lakes, Ill.

1. Miscellaneous Tests and Minor Investigations. NM 005 051.14, 1953.

Naval Medical Field Research Laboratory, Camp Lejeune, N.C.

1. A Preliminary Study on the Relationship of Endogenous Reserves and Ultraviolet Irradiation Sensitivity, Heat and Metabolic Reactivation. NM 005 052.27.04, Jan 1954.
2. High Altitude-High Velocity Flying With Special Reference to the Human Factors: III. Bare Skin Hazard from Frostbite in Escape from Aircraft. NM 006 014.02.02, Sept 1950.

U. S. Naval School of Aviation Medicine, NAS, Pensacola, Fla.

1. A Measurement of the Temporary Effect of Noise Upon Hearing. NM 001 064. 01. 18, 1 Nov 1953.
2. Dental Complaints of Flying Personnel. NM 001 057. 11. 02, 25 Nov 1953.
3. Aspects of the Autonomous Personality: I. Manifest Anxiety. NM 001 058. 25. 03, 12 Nov 1953.

Medical Research Laboratory, Submarine Base, New London, Conn.

1. Three Charts for Measuring Chromaticity Shifts Resulting From Changes in Illumination, Macular Pigmentation, and Intraocular Absorption. NM 003 041. 19. 03, 14 Oct 1952.
2. The Effect of Illumination Level and of Flash Brightness on Blocking the Alpha Rhythm of the EEG With Light. NM 003 041. 18, 17 Sep 1952.
3. Effect of Prolonged Exposure to Carbon Dioxide Upon Oxygen Consumption of Liver Tissue and Barbiturate Detoxication Time in Guinea Pigs and Rats. NM 002 015. 11. 01, 25 Nov 1953.
4. Carbon Monoxide Toxicity in Submarine Operations: A Case Report. NM 002 015. 03. 08, 25 June 1952.
5. Studies of Oxygen Toxicity: 2. A Warning Sign of Acute Symptoms of Oxygen Toxicity. NM 002 015. 03. 09, 4 Aug 1953.

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BUMED NOTICE 1770 8 Mar 1954

From: Chief, Bureau of Medicine and Surgery
To: Activities in Continental United States Having Annual Navy Contracts for Care of the Dead: All Commandants of Naval Districts and River Commands, Continental United States; and Commandant, Tenth Naval District

Subj: Standard Burial Contracts

Ref: (a) BuMed Inst. 1770. 3 of 25 May 1953

This notice insures that invitations to bid on subject contracts are not issued until new instructions are promulgated.

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BUMED INSTRUCTION 5200. 1 11 Mar 1954

From: Chief, Bureau of Medicine and Surgery
To: All BuMed Management Control Activities

Subj: Management Improvement Program

Encl: (1) Copy of BuMed Inst. 5200.

This instruction forwards enclosure (1) concerning the Management Improvement Program and states the responsibility of addressees in connection therewith.

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Change of Address

Please forward requests for change of address for the News Letter to: Commanding Officer, U. S. Naval Medical School, National Naval Medical Center, Bethesda 14, Maryland, giving full name, rank, corps, and old and new addresses.

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PREVENTIVE MEDICINE SECTION

General Sanitation

Sanitation of Crushed Ice

The following information collected from 3 sources concerns one of the most interesting problems that have recently demanded attention: the sanitary quality of crushed ice used for ice water and other iced drinks.

Because water-borne diseases may easily be spread by contaminated ice, all ice used either in iced drinks or in direct contact with food should conform bacteriologically to the accepted standards for potable water. Despite the fact that ice is by its very nature one of the products most amenable to sanitary production and handling, the majority of crushed ice and cubed ice at the consumer level, according to data published in the

October 1953 issue of Public Health Reports, is of extremely poor sanitary quality. The high plate counts, the presence of significant numbers of Escherichia coli, clostridia, micrococci, and streptococci, and the quantities and types of inanimate material present in crushed and cubed ice suggest recent, heavy contamination. Such organisms may be introduced into crushed ice in many ways, chief among which are the introduction of dust during freezing into the cake from which the crushed ice is made; contamination of the cake from the floors of freezing rooms, trucks, and restaurants; and contamination from chippers, crushed ice containers, or human hands during dispensing.

Recent investigation has shown that, of the foregoing contamination sources, handling during dispensing is the most prolific source. A series of tests revealed that, despite strict rules to the contrary and the posting of notices, hands were straying into the chipped ice during the process of dispensing. The temptation to handle the ice is great, as anyone who has observed the rapid serving of large numbers of iced drinks will testify. Also, it was evident that no reasonable degree of supervision would eliminate the problem.

In an effort to correct the situation, a university dining hall was selected for an experiment. A solution of sodium hypochlorite containing 2 ppm of available chlorine was added to the container of crushed ice so as to nearly cover the ice which was then dispensed as usual. As a result, the bacterial count was greatly reduced, and no coliform organisms were found in any of the samples taken during the time the ice was being served. The best feature of this procedure was that no chlorine flavor was imparted to the ice water or iced drinks. Actually, the amount of chlorine solution found in any glass was negligible.

The procedure followed in adding the solution involved 3 steps:

1. Preparation of stock solution (approximately 256 ppm). --Using a 25 or 50 milliliter graduated cylinder, add to a clean 1-gallon jug 25 milliliters of 4% hypochlorite solution, or 20 milliliters of 5.25% solution. Fill jug with tap water and mix. Keep tightly closed and under refrigeration. This solution will keep about a month.

2. Preparation of disinfecting solution for ice (approximately 2 ppm). Add 1 fluid ounce of stock solution to each gallon of tap water and mix. Pour this solution into the container of crushed ice until the latter is practically covered.

3. Dispensing of ice. --Dispense ice directly from container of chlorine solution. Excess liquid may, if desired, be poured off as the ice is used, but the ice should be substantially covered with solution at all times.

Additional research is necessary to evaluate the relative significance of the many factors contributing to the poor quality of crushed and cubed ice. The implications associated with the extensive consumption of such a product are obvious. In the meantime, sanitarians should acquaint the public with the need for a better product and also provide producers and handlers

with the necessary information to meet a demand for high-quality ice. Until the time when the producer and handler are thoroughly educated and disciplined along these lines, the simple measure outlined above might well be standard practice in all places where crushed ice comes in contact with food or drinks. (Sanitary quality of crushed and cubed ice as dispensed to the consumer, U. S. Department of Health, Education, and Welfare, Public Health Service, Public Health Reports, Oct. 1953, V. D. Foltz, M. S.; Sanitation of crushed ice for iced drinks. Am. J. Pub. Health, Oct. 1953, E. W. Moore, E. W. Brown, and E. M. Hall, Department of Hygiene, Harvard University; Editorial--Sanitation of Crushed Ice, J. A. M. A., Nov. 21, 1953)

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Ship to Shore Water Connections

The Chief of Naval Operations Instruction 9930. 1, dated 14 January 1954, which recently has been sent to all ships and stations, cancels and supersedes CNO Letter Op-23-2-MM, Serial 211523 of 28 May 1945 (NDB Cum. Ed. 1948, 45-554, p. 130).

The purpose of this instruction is to promulgate restrictive regulations regarding ship-to-shore water connections. Should a fire or plumbing system aboard a Navy ship be connected to a fresh-water system ashore without the use of backflow prevention devices, it would be possible for a backflow to develop with resultant contamination of the drinking water system ashore, due to the higher pressure in the fire or plumbing line. At locations where a municipal water supply is involved, such a cross-connection with a polluted source is a violation of State laws, water ordinances, or regulations. Backflow-prevention devices are considered a reasonably reliable means of preventing contamination. However, sole reliance should not be placed on such devices.

OpNav Instruction 9930. 1 gives a detailed directive as to ship-to-shore connections. Ship-to-shore water connections are the responsibility of the Engineering Department. However, the Medical Department representative must maintain proper surveillance to insure that no health hazards are introduced.

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Steam Tables and Kettles

Steam tables and kettles having submerged inlets are always potential health hazards because of the possibility of fresh water systems being contaminated through them.

Instruction 9340.9A, published by the Bureau of Ships on 3 February 1954, will be instrumental in eliminating improper fresh-water supply, drain, and vent connections on this type of food-service and food-preparation equipment. The instruction identifies improper connections and also prescribes remedial steps to be taken by ships' forces.

The Bureau of Yards and Docks has established similar standards through design criteria for shore stations. Their technical publications will continue to maintain these standards.

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Bakepan Sanitation and Maintenance

Bakepans, if allowed to become covered with a layer of rancid carbonized grease, become potential health hazards.

The Bureau of Ships has published a satisfactory method of cleaning bakepans in the Bureau of Ships Information Bulletin No. 46, dated 1 April 1952. A change to paragraph "C. Precautions" was subsequently published in the Bureau of Ships Journal of June 1952.

The article is considered to be an excellent guide to the sanitizing and maintenance of baking pans. The pans should be properly stored at all times when not in use. Vectors should be eliminated from the premises.

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Coliform Population, San Diego Harbor

Preventive Medicine Unit No. 5, Naval Hospital, San Diego, Calif., reports that the project involving determination of coliform densities in San Diego Harbor and the death rates of coliform from sewage in open sea water, bay water, and "tap water," has resulted in several observations which are being investigated further. Preliminary results indicate the coliform population in the harbor to be considerably lower than would be expected if the sole limiting factors were sewage effluent in the bay versus tidal dilution and death rate. It would appear that other factors, such as sedimentation, exert more influence than originally anticipated. Investigation is also in progress concerning the relative survival rates in sea water of pathogenic organisms (Shigella-Salmonella) versus nonpathogenic coliforms.

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The printing of this publication has been approved by the Director of the Bureau of the Budget, June 23, 1952.

Insect and Rodent Control

Repellents

Two types of repellents are provided for protection of personnel against disease vectors. One type is intended for direct application to the skin, although it may also be applied directly to clothing surfaces. The other is known as the clothing impregnant and should not be used for direct skin application.

The standard skin repellent, now available through the Catalog of Navy Material, General Stores Section, Class 51, is listed as "Insect Repellent, Type A, stock number G51-D-237-400, 2-ounce bottle," and consists of 60% dimethyl phthalate, 20% ethyl hexanediol, and 20% "Indalone." Each of these materials is particularly effective against certain insects, and the mixture gives protection against a wider range of species than any of the individual components. It is very effective as a mite repellent and miticide, when applied to all openings of the clothing. New skin repellent formulations are being developed which will eventually replace this item but are not considered as presenting enough advantages to justify disposal of present stocks.

The clothing impregnants give better protection from vectors which bite through, or crawl upon, the clothing. This method is particularly suitable for protection against mites, the vectors of scrub typhus. A combination consisting of 45% benzyl benzonate, 45% dimethyl phthalate, and emulsifier, diluted at the rate of 1 part of concentrate to 18 parts of water is currently used for this purpose. The concentrate is available as "Military Specification, MIL-R-13180 (QMC), stock number 51-R-300" and may be procured through the Army Quartermaster. This item is not mosquito repellent. Dimethyl phthalate in 1-gallon cans is still available through the Catalog of Navy Material, General Stores Section, Class 51, as "Insect Repellent, Type B, stock number G51-D-237-425," and although effective against both mosquitoes and mites when applied as a clothing impregnant, it does not contain an emulsifier. Impregnation can be carried out by immersing the clothing in an emulsion made of 5% dimethyl phthalate, 2% laundry soap, and 93% water. A new clothing impregnant containing emulsifier, and effective against a wide range of vectors, has been developed but has not yet been cleared for routine use.

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Control of Plague Vectors

Present trends in plague vector control are reported in several articles in the Bulletin of the World Health Organization, Vol. 9, No. 5, 1953, as follows:

Certain new rodenticides, such as sodium monofluoracetate, are extremely effective, but, due to their rapid action, must be used with utmost care because of great danger to domestic animals and man. Attention is therefore drawn to the more recently introduced anticoagulants such as Warfarin which, although not dangerous for domestic animals or for man, prove fatal for rodents if ingested repeatedly.

The WHO Expert Committee on Plague, while fully recognizing the value both of prolonged antirodent campaigns with anticoagulants and of the new rapidly acting rodenticides, when used with due precautions, emphasized the fundamental importance of rat-proofing methods--in particular, house improvement--which permanently reduce or even completely preclude contact between the rodents and man, and are therefore the ideal means of combating rat-borne diseases.

The excellent results obtainable in plague control with the insecticides now available are exemplified by P. M. Wagle and S. C. Seal in a contribution which summarizes the work done in this connection in India. Observations made in that country as well as in other foci have demonstrated so fully the efficacy of DDT in destroying the vector fleas that the application of this insecticide has undoubtedly become the method of prime importance for dealing with actual plague manifestations.

On the other hand, from South America comes the disquieting information, reported in the article by C. Saenz Vera, that repeated applications of DDT may induce a resistance to this insecticide in the flea populations concerned. In view of this, the committee recommended that the search be continued for new insecticides, which could replace DDT, should the need arise, in antiflea campaigns. (Chronicle, World Health Organization, Vol. 7, No. 12)

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Recent Publications of Interest

The following recent publications may be of interest to preventive medicine personnel concerned with insect and rodent control:

Logan, J. A., et al.: The Sardinian Project: An Experiment in the Eradication of an Indigenous Malarious Vector 1953. The Johns Hopkins Press, Baltimore, Md.

Brown, V. E.: Synopsis of Medical Entomology. 1953. Edwards Brothers, Inc., Ann Arbor, Mich.

Gajdusek, D. C.: Acute Infectious Hemorrhagic Fevers and Mycotoxicoses in the Union of Soviet Socialist Republics. May 1953. Medical Science Publication No. 2, Army Medical Service Graduate School, Walter Reed Army Medical Center, Washington, D. C.

Industrial Medicine

Experiences in Locating Suitable Spaces for Audiometric Testing at the U. S. Naval Air Station, Norfolk, Va.

Many locations on the station have been investigated in an effort to find a space having sufficiently low noise intensity to permit the making of audiograms on individuals exposed to excessive noise. The study revealed that the noise level intensity in a reefer located in a galley of an unused brick building, referred to in table 1 as "Building B," ranged from 26 to 30 decibels. The distance between this building and the industrial area necessitates the use of transportation for the technician and subjects. However, the reefer will be used until a more conveniently located space can be provided.

Sufficient evidence has been accumulated to justify providing a space having a low noise level. Many of a group of employees exposed to jet and reciprocating engine noises on the field are showing a much smaller binaural loss when checked in the low intensity space than was shown on their periodic examination approximately 1 year ago. At that time the tests were conducted in a room in the Industrial Dispensary, referred to in table 1 as "Building A," having a noise level intensity of 55 to 65 decibels. Table 1 compares the apparent binaural hearing loss of a few of the individuals checked in the two locations.

Table 1. --Decibel (db) loss at 4,000 cycles per second (cps) and percentage of total loss in 1952 and 1953 tests

Subject	Building A 55-65 db 1952		Building B 26-30 db 1953	
	Percentage of total loss	Decibel loss at 4,000 cps (binaural average)	Percentage of total loss	Decibel loss at 4,000 cps (binaural average)
A	4.0	23	0.7	13
B	3.5	18	0.6	13
C	2.7	0	0.0	0
D	9.8	38	4.7	38
E	9.1	30	0.9	20

It is believed that other activities needing suitable spaces for audiometric testing may be interested in the information concerning the low noise

intensities in the large walk-in type of refrigerated space. Many of the larger activities probably have such spaces available.

Communicable Disease Control

Military Importance of Leprosy

Leprosy is a world problem of great magnitude. The total estimate is not less than 3, and probably more than 5, million cases. A large proportion of lepers become totally disabled through contractures, blindness, or other sequelae, and others are unable to find work because of the attitude of the public towards the disease. Leprosy is seldom a military problem during operations but is always a problem in veterans who have served in endemic areas. The long period between infection and discovery is a peculiar feature. Cases continued to be discovered in veterans of the Spanish-American War until about 1940. Veterans of World War I are still being admitted to Carville; from 1921 to 1940, 51 were admitted. By March 15, 1953, 77 veterans of World War II, who had served in the U. S. Armed Forces, had been admitted to leprosaria in the United States, Hawaii, or the Philippines. It is almost a certainty that cases will continue to be recognized in World War II and Korean veterans for many years. Also, it must be borne in mind that leprosy in veterans will be considered to have been aggravated by military service in nearly all cases, whether or not it was contracted as a direct result of such service.

At present the disease is probably never cured; it may become arrested by intensive and prolonged sulfone treatment, and occasionally even without treatment, but the danger of relapse is always present. (Clinical Evaluation Studies in Leprosy, Leonard Wood Memorial (American Leprosy Foundation) Report to the Veterans Administration, January 7, 1954)

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Enteric Pathogen Survey Among Recruits

Preventive Medicine Unit No. 4, Naval Training Center, Great Lakes, Ill., recently completed a survey of 1,000 newly arrived recruits from the North Central States and concluded that the possibility of enteric infections arising in a military population from carriers in such personnel offers no significant threat. Six hundred and three rectal cultures from 526 men were isolated and identified as follows: 2 paracolon; 176 Escherichia-Aerobacter; 103 Proteus; 53 Pseudomonas; 3 Alcaligenes; 1 alkalescens-dispar group; and 1 Salmonella montevideo.

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Venereal Disease Control

Routing of Venereal Disease Contact Reports

Several State health departments have complained recently that some activities are directing venereal disease contact reports directly to the city in which the contact may be located rather than to the State health department. The forwarding of reports directly to a city health department is done only where special arrangements have been made by the naval activity and the local and State health departments for such routing or in the case of those cities listed in the Contact Report Form Preparation and Routing section of the "Interviewer's Aid For VD Contact Investigation," NavMed P-1288. In those cases where sending of reports directly to the city health department is authorized, the yellow copy is sent to the State health department. Addresses of State health departments are listed in the Contact Report Form Preparation and Routing section of the "Interviewer's Aid," NavMedP-1288.

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DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
WASHINGTON 25, D. C.

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